

**A Method to Measure the Activation State of  
Signaling Pathways in Cells**

**Abstract of the Disclosure**

5 The activity of multiple proteins in a single living cell, portion of a cell or in a group of cells is simultaneously measured by introducing reporter molecules. The reporter(s) is chemically modified by the enzyme of interest. In some cases the enzyme(s) is affected by the addition of a stimulus or a pharmaceutical compound to the cell. The reactions between the enzymes and the reporters are 10 diminished or terminated, and the reporter and modified reporter are removed. The activity of the enzyme(s) is determined by measuring the amount of reporter remaining, the amount of altered reporter produced, or by comparing the amount of reporter to the amount of altered reporter. A database is compiled of the activities of the different proteins. By performing a series of experiments at 15 different time points, conditions, and varieties of cell types, a database is developed for molecular cellular mechanisms in health and disease states. By exposing cells to a variety of compounds data for drug development and screening is provided.